

STEKHANOV, A. I.

USSR/Physics

Crystals

Mathematics, Applied

Nov/Dec 48

"Dependence of Spectra of Diffused Light in Crystals on Temperature," Ye. F. Gross,
P. P. Pavinskiy, A. I. Stekhanov, Physizotekh Inst, Acad Sci USSR, Chair of Theoretical
Phys, Leningrad State, U, 13 pp

"Iz Ak Nauk SSSR, Ser Fiz" Vol XII, No 6

After theoretical mathematical analysis of this dependence, concludes that for increase in temperature the curve of intensity distribution of the spectrum of the second rock salt series must decrease without changing shape, and increase in intensity for the entire curve must occur approximately in proportion to the square of the absolute temperature.

PA 25/49T101

STEKHANOV, A. I.

USSR/Physics - Crystals, Rock Salt Polarization

Sep 49

"Polarization of the Spectrum of Second-Order Dispersion of a Rock Salt Crystal," Ye. F. Gross, Corr Mem, Acad Sci USSR, P. P. Pavinskiy, A. I. Stekhanov, Leningrad Physicotech Inst, Acad Sci USSR, 4 pp

"Dok Ak Nauk SSSR" Vol LXVIII, No 1

Used a quartz spectograph and a powerful water-cooled mercury-arc lamp to study subject spectrum. Mercury resonance line of 2,537 Å was used for excitation. Placed rock salt crystals in special quartz containers, heated to 700° and illuminated by an unpolarized source light. Light diffused by rock salt crystal was collected by a fluorite lens and passed through an Iceland spar crystal set in front of the spectrograph slot. Results of polarization studies of reflective diffusion spectrum of rock salt at high temperatures showed that most polarized part of spectrum is that of low frequencies from 60 to 200 cm⁻¹. Submitted 4 Jul 49.

PA 2/50T102

CA

3

Second-order Raman spectra of crystals of sodium bromide and potassium iodide. A. I. Stekhanov and M. L. Petrova (Leningrad Phys.-Tech. Inst.). *Zhur. Ekspil. Teoret. Fiz.* 19, 1108-12(1949).—The spectra were obtained with cylindrical single crystals 20–40 mm. high, diam. 8–10 mm., grown from the fused salts, in excitation with Hg 2537 Å., in 5.5 hrs. and 16 hrs. exposure for NaBr

and KI, resp. The observed frequencies are, for NaBr, 31, 64, 116, 152, 181, and 254 cm^{-1} ; for KI, 63, 91, 105, 123, 172, and 255 cm^{-1} ; the extension of the Raman spectrum, 400 and 300 cm^{-1} , resp. Hence, the range of greatest d. of frequencies in the elastic spectrum of the crystal is estd. to 60–140 and 30–100 cm^{-1} for NaBr and KI, resp. The temp. dependence of the intensity, specifically the validity of the relations of Gross, *et al.* (C.A. 44, 4333g) requiring, at sufficiently high temps., a proportionality of the intensity of the 2nd-order Raman spectrum with T^2 , could not be ascertained for KI owing to the absorption in 2537 Å. appearing at 130°C. In contrast thereto, NaBr was found to be transparent in 2537 Å. up to 400°C. By photographic photometry, the ratios of the intensities of the frequencies 31, 64, 116, 152, and 254 cm^{-1} , at 550 and at 390°K., were found to be 1.05, 0.98, 0.97, 0.95, and 0.84, very close to the values following from the exact formula of G., P., and B., and fairly close to the approx. T^2 law. N. Thon

STEKHANOV, A. I.

PA 152T96

USSR/Physics - Spectrum Analysis
Combination Scattering

Dec 49

"The Spectra of Second-Order Combination
Scattering in NaBr and KI Crystals," A. I.
Stekhanov, M. L. Petrova, Leningrad Physicotech
Inst, Acad Sci USSR, 5 pp

"Zhur Eksper i Teoret Fiz" Vol XIX, No 12

Obtains subject spectra. Verifies the law
of temperature dependency in the case of
second-order spectra in NaBr crystals.
Spectra are in the form of microphotograms.
Submitted 18 Aug 49.

FDD

152T96

CA

Second-order Raman spectrum of the potassium chloride crystal. A. I. Siskhanov (Leningrad Phys.-Tekh. Inst.). *Zhur. Eksp. Teor. Fiz.* 20, 330-3 (1950).—No. 4
 The microphotogram of the spectrum shows a sharp max. at 240 cm.⁻¹, and 2 further maxima between the limits 100-130 and 170-216 cm.⁻¹. Near the Rayleigh line, there is a continuous band extending over 58 cm.⁻¹, very distinct from the Stokes side of the spectrum, less so from the anti-Stokes side owing to superposition of the Hg 2534 line. The whole spectrum extends over 439 cm.⁻¹. The 2nd-order Raman spectrum can be interpreted by combinations and octaves of frequencies of the elastic spectrum of KCl, $\nu_1 = 43$, $\nu_2 = 67$, $\nu_3 = 87$, and $\nu_4 = 140$ cm.⁻¹.
 N. Thon

STEKHANOV A. I.

USSR/Physics - Spectrography

Apr 51

"Combined Dispersion of Light of Second Order," E. F. Gross, P. P. Pavinskiy, A. I. Stekhanov

"Uspekhi Fiz Nauk" Vol XLIII, No 4, pp 536-586

Describes phenomena of combined dispersion of 2d order and results of theoretical and exptl res of 2d-order light dispersion by crystals.

(Raman spectra)

181T84


Stekhanov, A.I.

①
✓ 2615. Crystalline colour filters for the ultra-violet region of the spectrum. A. I. Stekhanov (*J. anal. Chem., USSR, 1953, 8, 18-21*). The use of cryst. filters, KCl + KBr, KBr + KI, etc., with suitable amounts of Pb or Ti to provide absorption bands, is recommended. Such filters have a high degree of transmission in the transparent region, are unaffected by u.v. radiation, do not change their characteristics with time, and by changing the amounts of the components and impurities can be made to cover various regions of the spectrum. A gas filter can be used in conjunction to cut off further unwanted parts of the spectrum. G. S. Smith.

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1/19/54

2

Effect of the hydrogen bond on the Raman spectrum.
A. I. Stekhanov. *Doklady Akad. Nauk S.S.S.R.* 92, 281-4
(1953) (Engl. translation issued as *U.S. Atomic Energy*
Comm. NSF-tr-189, 4 pp. (1954)).—The Raman spectrum
of cryst. gypsum, $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$, was investigated at 20°
and at -200° with a Zeiss quartz spectrograph of reciprocal
dispersion of 8 to 11 Å./mm. The Hg 2537-Å. line was
used as an exciting source. In the 3500- cm^{-1} region 8
lines were observed at low temp. (3230, 3273, 3340, 3403,
3480, 3504, 3620, 3673 cm^{-1}); of these the two central
lines (starred), which are by far the most intense, are assigned
to the O—H mode of vibration while the others are regarded
as combination modes of them and one or two low fre-
quencies belonging to the intermol. H bond itself. This
assignment is confirmed by the observation of low-frequency
Raman lines (110, 122, 132, and 146 cm^{-1}) showing parallel
behavior and, therefore, assumed to be H-bond funda-
mentals.
James L. Lauer



K-6

Category : USSR/Optics - Spectroscopy

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 2460

Author : Stekhanov, A.I.

Inst : Leningrad Phys.-Tech. Inst., Academy of Sciences USSR

Title : Intensity Distribution in the OH Band of the Raman Spectrum of a Gypsum Crystal

Orig Pub : Dokl. AN SSSR, 1956, 106, No 3, 433-436

Abstract : The Raman spectrum of a gypsum crystal in the region of the valent oscillations of the OH group represents a band up to 650 cm^{-1} wide of complex construction. Two wide and intensive lines with frequencies $\nu_1 = 3405 \text{ cm}^{-1}$ and $\nu_2 = 3495 \text{ cm}^{-1}$ were observed in the middle of the OH band. At $t = -195^\circ$ one can see clearly six additional weak lines, symmetrical about ν_1 and ν_2 . The ν_1 and ν_2 lines have different polarizations. These components shift in different directions during temperature measurements. The fine structure of the OH band in the Raman spectrum of the gypsum crystal is caused by the coupling between the intramolecular oscillations of the OH group with the intermolecular ones. This assumption is in good agreement with B. I. Stepanov's theoretical premises. The appearance of two fundamental frequencies in the gypsum spectrum in the region of the valent oscillations of the OH group are considered by the author as the result of the splitting of the symmetrical frequency of the water-crystallization molecule, caused by the tunnel effect. The dissociation energy of the hydrogen bond in gypsum is estimated and found to be $\epsilon_0 = 4.8 \text{ kcal/mol}$.

Card : 1/1

STK K W A N O V A I

SUBJECT: USSR/Luminescence.

48-3-3/26

AUTHOR: Stekhanov A. I.

TITLE: Structure of the OH-Band in Crystals Possessing Hydrogen Bonds
(Struktura polosy OH v kristallakh sodershashchikh vodorodnuyu svyaz')

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya fizicheskaya, 1957, Vol 21,
#3, pp 311-321 (USSR)

ABSTRACT: This article describes the results of studying the combinational dispersion spectra of gypsum, Seignette's salt, ammonium dihydrophosphate and sodium dihydrophosphate in the high-frequency spectrum region, and the absorption spectrum of gypsum in the region of the first overtone of OH-oscillations.

An installation which made it possible to obtain distinct dispersion spectra from the resonance mercury line of 2,537 Å was applied during the studies of combinational dispersion spectra of crystals. Crystal spectra were studied at various orientations of their crystallographic axes with respect to the beam axes of exciting and dispersed light. The infrared absorption spectrum of gypsum was investigated with a Mueller-Hilger double quartz monochromator which has a dispersion of 55 Å/mm in the region of

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48-3-3/26

TITLE:

Structure of the OH-Band in Crystals Possessing Hydrogen Bonds
(Struktura polosy OH v kristallakh soderzhashchikh vodorodnuyu
svyaz')

6,500 cm^{-1} frequencies. A PbS photoresistor was used as a reception device for infra-red radiation.

Spectrograms pictured in Fig 1 show that the gypsum dispersion spectrum in the region of OH-group oscillations consists of 2 intensive combination lines with frequencies of 3,408 and 3,484 cm^{-1} at a temperature of -196°C . The doublet width changes considerably with temperature: it increases from 76 to 94 cm^{-1} with temperature rise from -196 to $+100^{\circ}\text{C}$.

The appearance of 2 intensive lines in the region of valence oscillation of the OH-group is considered as being a result of splitting the symmetric-frequency of crystallization water molecules due to the tunnel effect of the proton. The splitting increase with temperature seems to be connected with the fact that transition probability of a proton from one potential well to another rises with temperature due to the barrier decrease.

A double band in the region of OH-group oscillations is observed also in the infra-red spectrum of gypsum.

Distinct dispersion spectra in the region of valence oscillations of the OH-group were obtained also in experiments with Seignette's

Card 2/4

48-3-3/26

TITLE:

Structure of the OH-Band in Crystals Possessing Hydrogen Bonds
(Struktura polosy OH v kristallakh soderzhashchikh vodorodnuyu
svyas')

salt crystals. Their interpretation suggested by Chapelle et al. (15) does not seem to be correct. Their complicated structure is ascribed to the presence of hydrogen bonds of different length.

A band of continuous spectrum with 3_1 very broad intensity maxima at 2,650, 2,840 and 3,150 cm^{-1} was observed in the dispersion spectrum of $\text{NH}_4\text{H}_2\text{PO}_4$.

Two doublets: $3,263-3,322 \text{ cm}^{-1}$ and $3,396-3,454 \text{ cm}^{-1}$ and a singlet line at $3,559 \text{ cm}^{-1}$ were observed in the $\text{NaH}_2\text{PO}_4 \cdot 2\text{H}_2\text{O}$ spectrum.

Thus the characteristic doublet structure of the OH-band was discovered in the combinational dispersion spectra of gypsum, Seignette's salt, ammonium dihydrophosphate and sodium dihydrophosphate. This structure can be interpreted from the viewpoint of the proton tunnel effect.

The article includes 1 spectrum, 4 microphotograms, 2 figures and 2 tables. The bibliography lists 17 references, of which 7 are Slavic (Russian)

Card 3/4

48-3-3/26

TITLE: Structure of the OH-Band in Crystals Possessing Hydrogen Bonds
(Struktura polosy OH v kristallakh soderzhashchikh vodorodnuyu
svyas')

INSTITUTION: Leningrad Physico-Technical Institute of the USSR Academy of
Sciences

PRESENTED BY:

SUBMITTED: No date indicated

AVAILABLE: At the Library of Congress.

CARD 4/4

STEKHANOV, A. I.

AUTHOR:

Stekhanov, A. I.

54-4-8/20

TITLE:

Interaction of Internal and External Molecular Oscillations of the Water Molecules in the Gypsum Crystal. (Vzaimodeystviya vnutrimolekulyarnykh i mezhmolekulyarnykh kolebaniy molekuly vody v kristalle gipsa).

PERIODICAL:

Vestnik Leningradskogo Universiteta Seriya Fiziki i Khimii, 1957, Vol. 22, Nr 4, pp. 62-69 (USSR).

ABSTRACT:

At a temperature of $t^{\circ} = -196^{\circ}\text{C}$ two distinct and a few more weak spectrum lines can especially well be observed in the Raman spectrum of the gypsum crystal in the band of oscillation of the OH-group. This band structure results from the valence oscillations, as well as from the translatory intermolecular oscillations of the water molecule in the gypsum crystal. It is attributed to the hydrogen binding which exists between the water molecules and the SO_4 -ion. The presence of the faint lines results from the phenomenon cited in the title. The greater intensity of wide bands (2217 cm^{-1} and 4015 cm^{-1}), which show up more intensively than the usual spectral lines of second order, is explained by the stronger binding-power of the hydrogen bindings between the water molecule and the oxygen atom of the

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Interaction of Internal and External Molecular Oscillations 54-1-8/20
of the Water Molecules in the Gypsum Crystal.

SO₄ group. The phenomenon of the wide spectral bands 2217 cm⁻¹ and 4010 to 4100 cm⁻¹ is supposed to be the verification of the statement on the nature of the doublet structure of the OH-spectral band. There are 3 figures, 1 table, and 20 references, 9 of which are Shavic.

SUBMITTED: July 12, 1957.

AVAILABLE: Library of Congress.

Card 2/2

STEKHANOV, A. I.

$\omega_1 - \Omega_6; \omega'_1 - \Omega_6; \omega_1 - \Omega_4); 923 (\omega_2 + \omega_3; 2\omega_2; \omega''_2 - \Omega_6; \omega_1 - \Omega_6; \omega_1 - \Omega_7); 951 (\omega'_2 - \Omega_6; \omega''_2 - \Omega_6; \omega'_2 - \Omega_6; \omega''_2 - \Omega_7); 968 (\omega''_2 - \Omega_6); 1020 (\omega'_2 - \Omega_6; \omega''_2 - \Omega_6; \omega_2 - \Omega_6; \omega'_2 - \Omega_6; \omega_2 - \Omega_7); 1057 (\omega''_2 - \Omega_6; \omega'_2 - \Omega_6; \omega_1 + \Omega_2; \omega'_2 - \Omega_6); 1214 (\omega'_2 + \Omega_6; \omega'_2 + \Omega_6; \omega'_2 + \Omega_6); 1241 (2\omega_2; \omega'_2 + \Omega_6; \omega''_2 + \Omega_6; \omega'_2 + \Omega_6; \omega_2 + \Omega_6; \omega'_2 + \Omega_6; \omega'_2 + \Omega_6); 1260 (\omega_2 + \omega_3; 2\omega_2; \omega'_2 + \Omega_6; \omega'_2 + \Omega_6; \omega_2 + \Omega_6; \omega'_2 + \Omega_6); 1292 (\omega_2 + \omega_3; \omega'_2 + \Omega_6; \omega'_2 + \Omega_6; \omega'_2 + \Omega_6; \omega'_2 + \Omega_6; \omega_2 + \Omega_6; \omega'_2 + \Omega_6); 1370 (\omega_2 + \Omega_6); 1435 (\omega_1 + \omega_3); 1449 (\omega_1 + \omega_3); 1603 (\omega_1 + \omega'_2; \omega_2 + \omega'_2; \omega_1 + \omega_3); 1071 (2\omega_1); 2218 (2\omega''_2; \omega'_2 + \omega'_2; \omega'_2 + \omega'_2). On heating these crystals to 500°, the Raman lines shifted in the direction of the short-wave region, the width of the bands increased, and the spectrum became blurred. These results reveal that the Raman spectra of CaCO_3 and BaSO_4 are much more complex than has hitherto been thought. 24 references.$

A. P. Kotloby.

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4E3d.
4E4j

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gr

STEKHANOV, A. I.

OH band structure in crystals containing hydrogen bonds. Izv. AN
SSSR. Ser.fiz. 21 no.3:311-321 M= '57. (MLRA 10:7)

1. Leningradskiy fiziko-tekhnicheskoy institut Akademii nauk SSSR.
(Crystals--Spectra)

STEFANOV, A. I.

51-2-6/15

AUTHOR: Stekhanov, A.I.

TITLE: Raman scattering spectra of crystals which contain complex ions. (Spektry kombinatsionnogo rasseyaniya kristallov, soderzhashchikh slozhnyye iony).

PERIODICAL: "Optika i Spektroskopiya" (Optics and Spectroscopy) 1957, Vol.3, No.2, pp.143-157 (U.S.S.R.)

ABSTRACT: This was first reported in a lecture at the Leningrad Physico-Technical Institute in 1953. It is a continuation of a series of papers on Raman scattering spectra (R.s.s.) of alkali halide crystals (Ref.1-4). The latter possess only second-order R.s.s. The CaCO_3 and BaSO_4 spectra (both first- and second-order) are reported on in this paper. Hg resonance line at 2537 \AA was employed. The R.s.s. were photographed using a Zeiss quartz spectrograph with 8 \AA/mm dispersion. Figs.1 and 2 shows the CaCO_3 and BaSO_4 spectra obtained both at 20°C and at 500°C . Both spectra possess strong lines (first-order R.s.s.) as well as weak lines and a continuous spectrum with wide maxima superimposed on it (second-order R.s.s.). CaCO_3 has a total of 42 lines and intensity maxima. They are listed (with widths and interpretations) in Table 1 (2 $\frac{1}{2}$ pages). BaSO_4 has 50 lines which are listed, together with broad maxima, in Table 2 (2 $\frac{1}{2}$ pages). On increase of temperature to 500°C the continuous spectra of CaCO_3 and BaSO_4 increase in

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combination bands, i.e. all the
combination bands. Since

51-2-6/15

Raman scattering spectra of crystals which contain complex ions. (Cont.)

insufficient i.r. data on BaSO_4 are available, no such comparison could be made in this case. The author thanks Corresponding Member of the Academy of Sciences of U.S.S.R. E.F.Gross for his interest and critical appraisal of the work. There are two figures (plates with spectra), two tables (spectral frequencies etc.) and 24 references, 9 of which are Slavic.

References cited: 1-4

SUBMITTED: December 29, 1956.

AVAILABLE: Library of Congress

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STEKHANOV, M. I.

7 27 7
~~Structure of the OH band in crystals containing a hydro-~~
~~gen bond. A. I. Stekhanov (Phys. Tech. Inst., Lening-~~
~~grad). Invest. Akad. Nauk S.S.S.R., Ser. Fiz. 21, 311-21~~
~~(1957).—Observations were made on the Raman spectrum~~
~~and the infrared spectrum of gypsum, Seignette salt,~~
~~(NH₄)H₂PO₄, and NaH₂PO₄·2H₂O. A PbS cell was used~~
~~as a detector of infrared. In gypsum (spectrographed at~~
~~100 and -196°) the OH band consists of lines 3405 and 3495~~
~~cm.⁻¹ (room temp.). The sepn. of the doublet lines in-~~
~~creases with rising temp. In the infrared gypsum has~~
~~several max. In Seignette salt the OH band is very broad~~
~~and goes from ~3000 to 3740 cm.⁻¹. It has 4 intensity max.~~
~~At -196° 3 of the max. change into sharp lines. In (NH₄)~~
~~H₂PO₄ there is a continuous spectrum of the OH band with~~
~~3 max. In NaH₂PO₄·2H₂O the band consists of 2 double~~
~~bands 3263-322 and 3396-454 cm.⁻¹. The 2 intense lines~~
~~in the gypsum spectrum are attributed to the splitting of the~~
~~asym. frequency of the crystal H₂O by the tunnelling effect~~
~~of a proton. This theory is substantiated by the exptl.~~

STEKHANOV, A.I.

Interactions between the internal and the external oscillations of
water molecules of the gypsum crystal [with summary in English].
Vest. LGU 12 no.22:62-69 '57. (MIRA 11:2)
(Molecular dynamics) (Spectrum analysis) (Gypsum crystals)

STEKHANOV, A.I.
USSR/Physical Chemistry - Crystals.

B-5

Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 7056.

Author : A.I. Stekhanov.

Inst :

Title : Raman Spectra of Crystals Containing Complex Ions.

Orig Pub: Optika i spetroskopiya, 1957, 3, No 2, 143-157.

Abstract: Raman spectra of CaCO_3 and BaSO_4 crystals were studied. It was established that the calcite and baryte Raman spectra were much more complicated than it had been assumed previously. The obtained spectra contain a great number of combination lines and a characteristic continuous spectrum, on the background of which wide intensity maxima appear. It is shown that only the intensive lines produce the Raman spectrum of the first order. The great number of weak lines and of intensity maxima of the continuous spectrum should be referred to the Raman spectrum of the

Card : 1/2

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Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 7056.

second order. An explanation of the peculiar form of the Raman spectrum of the second order of crystals containing complex atom groups is given.

APPROVED FOR RELEASE: 08/25/2000

CIA-RDP86-00513R001653110020-2"

Card : 2/2

-20-

AUTHOR: Stekhanov, A. I.

SCV/48-22-9-26/40

TITLE: Structure of the OH-Oscillation Band in the Spectra of Crystals Containing a Hydrogen Bond (Struktura polosy OH-kolebaniy v spektrakh kristallov, soderzhashchikh vodorodnuyu svyaz')

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958, Vol 22, Nr 9, pp 1109 - 1109 (USSR)

ABSTRACT: In this paper a report is given on thorough investigations of the Raman and infrared absorption spectra of more than 20 crystals at room- and at low temperatures. These studies resulted in the discovery of a very wide band of complicated structure of the valence oscillations of the OH group in the spectra of all crystals investigated. The structure of the band is especially well discernible at low temperatures. Instead of a wide OH band individual bands which are much narrower, and sharp lines are observed. Some characteristic features of the discreet structure of the OH band are very remarkable. First in some crystals a whole set of weak lines appears besides the intensive lines. Moreover, the intensive lines are in almost all

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Structure of the OH-Oscillation Band in the Spectra
of Crystals Containing a Hydrogen Bond

SOV/48-22-9-26/40

crystals either split into doublets or they appear as single lines. These are generally found at the short-wave edge of the OH band. The most probable reason for the formation of a doublet structure of the band is considered to be the tunnel effect of the proton (Ref 5). This effect can apparently occur in crystals with a hydrogen bond. The existence of weak lines in the band can be explained with the interaction between the intermolecular oscillations and the intermolecular translation oscillations of the water molecule in the crystal (Ref 4). There are 5 references, 3 of which are Soviet.

Card 2/2

STEKHANOV, A.I.

Structure of the OH vibration band in spectra of crystals containing
a hydrogen bond. Izv. AN SSSR. Ser. fiz. 22 no.9:1109 S '58.

(MIRA 11:10)

(Bonds, Chemical) (Hydroxyl group--Spectra)

AUTHORS: Stekhanov, A. I., Chisler, E. V. SOV/54-59-1-25/25

TITLE: The Temperature Dependence of the Raman Lines of the Scattered Light Spectrum of the Quartz Crystal (O temperaturnoy zavisimosti kombinatsionnykh liniy spektra rasseyaniya kristalla kvartsa)

PERIODICAL: Vestnik Leningradskogo universiteta. Seriya fiziki i khimii, 1959, Nr 1, pp 159-160 (USSR)

ABSTRACT: The authors (Refs 1-4) investigated the temperature dependence of the intensity of the Raman lines for various liquids, they could, however, not explain this dependence according to the existing theories (Refs 5-7). In connection therewith investigations were carried out in this paper concerning the temperature dependence of the intensity of the Raman spectrum at the quartz crystal. The investigations were carried out with a photoelectric device and intensive Raman spectra were obtained at 320 and 690°K. The results of measurement are given in a table. They show that the temperature course of the intensity differs in the case of individual Stokes lines, that intensity rises with the temperature, that the dependence which was determined experimentally does, however, not agree quantitatively with the

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SOV/54-59-1-25/25

The Temperature Dependence of the Raman Lines of the Scattered Light Spectrum of the Quartz Crystal

theoretical dependence. The line $\nu = 206 \text{ cm}^{-1}$ shows the greatest deviation. This fact is, however, ascribed to the indistrict extrapolation of the background within the range of the lines $\nu = 128$ and 206 cm^{-1} . In this connection the fact is indicated that in the case of an equal position of the maximum the line expands in general as well with rising temperature so that its integral intensity is considerably increased with temperature. The anomaly which had been detected for liquids was found to exist in the case of the quartz crystal as well. The authors thank Ye. F. Gross, Corresponding Member, AS USSR, for interest displayed in this investigation. There are 1 table and 9 references, 7 of which are Soviet.

Card 2/2

S/181/60/002/010/002/051
B019/B070

AUTHORS: Stekhanov, A. I., Eliashberg, M. B.

TITLE: Raman Effect¹¹ of Light on Compound Crystals of Alkali Halide Salts

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 10, pp. 2354-2355

TEXT: A study of the Raman effect of the second order is made for KBr and mixed crystals of KBr.KCl in three ratios of composition (80% KBr + 20% KCl, 40% KBr + 60% KCl, and 20% KBr + 80% KCl). The 2537-A Hg-line was used for the study, and the spectrum was photographed with a Zeiss quartz spectrograph. From the spectra of KBr and the mixed crystal with the composition 80% KBr + 20% KCl (Figs. 1,2), it is seen that these possess a complicated continuous structure with pronounced intensity peaks. In comparison to the pure crystal, the spectrum of the mixed crystal has a less pronounced peak and a larger width. These properties of the mixed crystal show an increase with increasing content of KCl. The feature of the KBr spectrum is, however, retained. From this it may be surmised that the scattering of light from the alkali halide salts

Card 1/3

Raman Effect of Light on Compound Crystals of
Alkali Halide Salts

S/181/60/002/010/002/051
B019/B070

is due principally to the electron shells of the halides. From studies of heated crystals, it was found that an increase of temperature affects the intensity distribution in the spectrum of the mixed crystals only slightly, and, further, that the intensity distribution has the same form in the spectra of both components of polarized light. The results obtained help to clarify some properties of the elastic scattered spectra of the crystals studied. The continuous character of the Raman effect certainly indicates a quasicontinuous character of the elastic scattering spectrum. On transition from one mixed crystal to another, there is a gradual change in the Raman spectrum; on transition from a pure KBr crystal to a mixed crystal, the change is much stronger. In the opinion of the authors, this is connected with the appearance of defects in the mixed crystals. The central symmetry as well as the translational symmetry are perturbed in a mixed crystal. The perturbation of the former leads to a spectrum of the first order. From a comparison with the results of experiments with heated rock salt, the authors are convinced that in pure crystals the defects are accompanied by weakly bound electrons, and in mixed crystals they are dominated by electrons that are not weakly

Card 2/3

Raman Effect of Light on Compound Crystals of Alkali Halide Salts S/181/60/002/010/002/051
B019/B070

bound. P. P. Pavinskiy is mentioned. There are 2 figures and 5 references;
4 Soviet and 1 German.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskii institut AN SSSR
(Leningrad Institute of Physics and Technology of the
AS USSR)

SUBMITTED: March 16, 1960

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Card 3/3

S/181/60/002/011/036/042
B006/B060

AUTHORS: Stekhanov, A. I. and Klochikhin, A. A.

TITLE: The Structure of the Vibrational Spectrum of the Hydrogen Bond in Some Crystals

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 11, pp. 2932-2937

TEXT: The authors studied the Raman spectrum and the infrared absorption spectrum of $\text{NaH}_2\text{PO}_4 \cdot 2\text{H}_2\text{O}$ crystals in order to clarify certain characteristics of the vibrational spectrum of the hydrogen bond and to determine the doublet splitting of the OH vibrational band for the symmetric hydrogen bridge. The Raman spectrum of light was excited in crystals by the 2537 Å resonance line of mercury and was examined on a quartz spectroscopy of the type Q-24 with 10 Å/mm dispersion in the region of OH vibrations. The spectra of infrared absorption were examined with an MKC-12 (IKS-12) infrared spectrometer with fluorite prism. The samples were suspensions of powders of the test crystals in oil. Fig. 1 shows a microphotogram of the Raman spectrum at 77°K and of the infrared absorption spectrum of this

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The Structure of the Vibrational Spectrum
of the Hydrogen Bond in Some Crystals

S/181/60/002/011/036/042
B006/B060

crystal (the latter taken with the help of Ye. A. Popova). The Raman spectrum shows five lines in the region of OH vibrations: 3263, 3322, 3396, 3453, and 3559 cm^{-1} . The infrared spectrum exhibits absorption maxima at these frequencies. The first four lines form doublets, while the last (narrow) line is isolated and points to the OH groups in the crystal, which exhibit a weak hydrogen bond. The two doublets are related to the stretching vibrations of the OH groups which are strongly disturbed by the hydrogen bond. The study was extended to the splitting of the energy levels in a double symmetrical potential well by making use of a quasi-classical method and a potential function suggested by N. D. Sokolov. The numerical calculation results are tabulated. Calculations included the magnitudes of splitting of the zeroth (ΔE_0), the first (ΔE_1), and the second (ΔE_2) vibrational level for symmetrical hydrogen bridges of three different lengths. The experimental values found for the splittings were 15 cm^{-1} , 105 cm^{-1} , and 215 cm^{-1} , respectively. An agreement in magnitude, however, was all there was to be expected for this approximate calculation (approximation of the potential course by a curve with two minima). The

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The Structure of the Vibrational Spectrum
of the Hydrogen Bond in Some Crystals

S/181/60/002/011/036/042
B006/B060

results are finally discussed. Professor N. D. Sokolov is thanked for discussions. There are 3 figures, 1 table, and 7 Soviet references.

ASSOCIATION: Fiziko-tehnicheskii institut AN SSSR Leningrad (Institute of Physics and Technology of the AS USSR, Leningrad)

SUBMITTED: July 23, 1960

$2d, \text{\AA}$	$ROH, \text{\AA}$	$d_0, \text{\AA}$	$\Delta V,$ KCAL/MOLES	$\Delta E_0, \text{cm}^{-1}$	$\Delta E_1, \text{cm}^{-1}$	$\Delta E_2, \text{cm}^{-1}$
2.82	1.02	0.8	32.90	1.3	36	302
2.72	1.02	0.7	27.12	10.5	198	830
2.56	1.10	0.56	10.70	320	—	—

Card 3/3

STEKHANOV, A.I.; KLOCHIKHIN, A.A.

On the appearance of a short hydrogen bond in crystal spectra. Vest.
LGU 15 no.16:145-148 '60. (MIRA 13:8)
(Hydrogen bonding) (Crystals—Spectra)

S/181/61/003/005/004/042
B101/B214

24.6110 (1160, 1163, 1227)

AUTHORS: Stekhanov, A. I., Gabrichidze, and Eliashberg, M. B.

TITLE: Raman scattering of second order to low temperatures

PERIODICAL: Fizika tverdogo tela, v. 3, no. 5, 1961, 1331-1334

TEXT: The object of the present work was to extend the study of Raman scattering to temperatures lower than those hitherto used. Large homogeneous crystals were grown from a melt of KI, $7 \times 7 \times 50$ mm samples of this crystal were cooled in a vacuum chamber with liquid nitrogen. The Raman spectrum was excited by the 2537-Å resonance line of Hg and photorecorded by means of a quartz spectrograph which had a dispersion of 8 Å/mm in this spectral range. The recording required 15 hr at room temperature and 50 hr at lower temperatures. The figure shows the microphotographs of the Raman spectra at 300°K (a) and 77°K (b). It was found that the Raman spectrum of the second order of KI is continuous. At low temperatures the condition $kT < \hbar\omega$ was satisfied, as $\omega_{\max} = \frac{1}{2}\omega_{\max}$ was equal to 170 cm^{-1} . The expected difference in the distribution of Stokes frequencies at 300 and 77°K did not

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23099

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B101/B214

✓

Raman scattering of second ...

appear. The explanation is that the strongly temperature dependent difference frequencies in Raman spectrum lie near the Rayleigh line. The difference frequencies in the high frequency part of the spectrum are only slightly temperature dependent, because one of the two frequency components is small. The small frequencies satisfy the condition $kT \gg \hbar\omega$ also at 77°K. Therefore, it is assumed that the observed second order spectrum of the KI crystal consists of sum and difference frequencies whose temperature can be approximately described by the temperature factor $Q^{(1)}$ of the spectrum of the first order. For the Stokes frequencies one obtains then

$Q_s^{(1)} = 1/[1 - \exp(-\hbar\omega/kT)]$, and for the anti-stokes frequencies

$Q_a^{(1)} = 1/[\exp(\hbar\omega/kT) - 1]$, the lattice being in good agreement with the

theory. The ultraviolet irradiation of the KI resulted in an intensive coloring of the crystal on account of the formation of F-centers in the lattice. The unchanged Raman spectrum of KI in the range of lower frequencies showed, however, no first-order scattering. From this it is concluded that the power of scattering of the F-centers in alkali halide crystals is insufficient. The most important conclusion is that the Raman spectrum of

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Raman scattering of second ...

S/181/61/003/005/004/042
B101/B214

second order is continuous, which is in agreement with the crystal theory of Born. The interpretation of C. V. Raman and R. S. Krishnan (Refs. 9, 10, see below) assuming a discreteness of the spectrum of the second order could not be confirmed. There are 1 figure and 10 references: 6 Soviet-bloc and 4 non-Soviet-bloc. The 3 references to English-language publications read as follows: C. V. Raman, Proc. Ind. Acad. Sci., A26, 339-398, 1947; R. S. Krishnan, Proc. Ind. Acad. Sci., A18, 298, 1943; R. S. Krishnan, Nature, 159, 266, 1947.

ASSOCIATION: Fiziko-tekhnicheskiy institut imeni akad. A. F. Ioffe, AN SSSR, Leningrad (Institute of Physics and Technology imeni Academician A. F. Ioffe, AS USSR, Leningrad)

SUBMITTED: December 1, 1960

Figure. Microphotographs of the Raman spectra of the second order of XI crystal.
Legend: a) 3000°K, b) 77°K.

Card 3/4

STEKHANOV, A.I.; CHISLER, E.V.

Temperature dependence of the intensity of Raman spectra in
crystals. Fiz.tver.tela 3 no.11:3514-3518 N '61. (MIRA 14:10)

1. Fiziko-tekhnicheskii institut im. A.F.Ioffe AN SSSR, Leningrad.
(Raman effect) (Crystals--Spectra)

STEKHANOV, A.I.; ELIASHBERG, M.B.

Second order Raman spectra of mixed crystals of alkali Halides.

Opt.1 spektr. 10 no.3:348-353 Mr '61. (MIRA 14:8)

(Alkali metal halides--Spectra)

STEKHANOV, A.I.; POPOVA, Ye.A.; KLOCHIKHIN, A.A.

Infrared absorption spectra of sodium dihydrophosphate.
Opt. i spektr. 10 no.6:799-801 307:61. (IRA 14:8)
(Spectrum, Infrared) (Sodium phosphate-Spectra)

STEKHANOV, A.I.; POPOVA, Ye.A.

Evidence of a hydrogen bond in the infrared spectra of crystalline lithium hydroxides. Opt. i spektr. 11 no.2:203-206 Ag '61.
(MIRA 14:8)

(Infrared rays)

(Lithium hydroxide—Spectra)

STEKHANOV, A.I.; GABRICHIDZE, Z.A.

Effect of the crystal structure on the vibration spectrum of
hydrogen bonding. Opt. i spektr. 11 no.3:359-361 S '61.
(MIRA 14:9)
(Hydrogen bonding) (Crystal lattices)

ACCESSION NR: AT4016302

S/0000/62/000/000/0083/0099

AUTHOR: Stekhanov, A. I.

TITLE: Raman spectra of alkali halide crystals

SOURCE: Vses. soveshch. po fiz. shchelochnogaloidn. kristallov. 2d, Riga, 1961.
Trudy*. Fiz. shchelochnogaloidn. kristallov (Physics of alkali halide crystals). Riga,
1962, 83-99

TOPIC TAGS: halide, alkali halide, alkali halide crystal, spectroscopy, Raman spectrum,
light scattering, first order spectrum, second order spectrum

ABSTRACT: Microphotographs of the second-order Raman spectra of alkali halide crystals (such as NaCl, NaBr, KCl, KBr and KI) show a clear picture of the intensity distribution in the spectrum. In the spectrum of NaCl the maximum intensity at 233 cm^{-1} is only 5 cm^{-1} wide, and the other maxima also show a relatively narrow band, not more than $10\text{--}15\text{ cm}^{-1}$. The width for other crystals is usually $3\text{--}8\text{ cm}^{-1}$. An investigation of the anomalous scattering in mixed crystals showed that the first-order spectrum in mixed crystals differs from the first-order spectrum of pure crystals. In mixed crystals there is not as strong a temperature dependence of the intensity of the anomalous irradiation as in pure crystals. In mixed crystals the concentration of the defects responsible for the

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ACCESSION NR: AT4016302

appearance of the first order spectrum is already great at room temperature, and it is only slightly increased by heating. Polarization investigations showed that the anomalous irradiation in mixed crystals is non-polarized, while in pure crystals the region of low frequencies is strongly polarized. The latter phenomenon is due to the different nature of the defects in pure heated crystals and mixed crystals, resulting in polarized or non-polarized first order spectra. It can be assumed that the defects accompanied by the appearance of weakly bound electrons are responsible for the anomalous first-order scattering, and that the appearance of first order spectra in mixed crystals is due to the imperfections which appear in the crystal lattice when impurities are added, and which are not accompanied by the appearance of weakly bound electrons. Orig. art. has: 8 tables, 6 figures and 1 formula.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR (Institute of Physics and Technology, AN SSSR)

SUBMITTED: 00

DATE ACQ: 06Mar64

ENCL: 00

SUB CODE: IC OP

NO REF SOV: 014

OTHER: 015

Card 2/2

STEKHANOV, A.I.; KOROL'KOV, A.P.

Raman spectrum in the cesium bromide crystal. Fiz. tver.
tela 4 no.11:3156-3160 N '62. (MIRA 15:12)

1. Fiziko-tekhnicheskii institut imeni A.F. Ioffe AN SSSR,
Leningrad.

(Cesium bromide crystals)
(Raman effect)

S/181/62/004/005/032/055
B108/B112

AUTHORS: Stekhanov, A. I., Korol'kov, A. P., and Eliashberg, M. B.

TITLE: Raman scattering in lithium chloride crystals

PERIODICAL: Fizika tverdogo tela, v. 4, no. 5, 1962, 1290 - 1292

TEXT: In this work the spectrum of Raman scattering in lithium chloride was obtained for the first time. The spectra excited at 370 and 770°K by the 2536.5 Å mercury resonance line are rather complex. In many respects the observed spectra are similar to those of NaCl. The LiCl spectrum is much larger than the spectra of the other alkali halide crystals. This is explained by the vibrations of the light Li⁺ ions relative to the Cl⁻ ions which are virtually at rest. In the frequency range 90 - 290 cm⁻¹ an abnormal first-order scattering due to lattice defects was observed. Calculations showed good agreement with the observed facts. There are 1 figure and 1 table.

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Raman scattering in lithium ...

S/181/62/004/005/032/055
B108/B112

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR
(Physico-technical Institute imeni A. F. Ioffe AS USSR)
Leningrad

SUBMITTED: January 6, 1962

Table: Frequencies (ν) and relative intensities (I) of the peaks in the spectrum of Raman scattering in LiCl.

ν , cm ⁻¹	I	ν , cm ⁻¹	I
49	6	337	8
86	6	357	8
116	3	375	10
128	3	405	10
147	2	432	7
159	2	444	7
168	2	453	6
207	3	472	5
227	4	498	5
274	5	522	4
292	6	540	2
298	7	558	1
307	7	618	1

Card 2/2

L 11068-63 EWT(1)/BDS/ES(s)--2--AFFTC/ASD/ESD-3/SSD--Pt-4--GG
ACCESSION NR: AP3000610

S/0181/63/005/005/1335/1338

AUTHOR: Stekhanov, A. I.; Gabrichidze, Z. A.

TITLE: The Raman effect[?] in Rochelle salt

SOURCE: Fizika tverdogo tela, v. 5, no. 5, 1963, 1335-1338

TOPIC TAGS: Raman effect, Rochelle salt, ferroelectric effect, paraelectric effect, hydrogen bond, vibrational spectrum, Hg

ABSTRACT: The authors have obtained a very complete vibrational spectrum of the hydrogen bond in Rochelle salt. They produced the Raman effect in a crystal of the salt by means of the 2537-Angstrom line of mercury, and they recorded the result by means of a quartz spectrography with dispersion of 10 Angstroms per mm in the region of the O-H vibration. The crystals were arranged to receive excitation light at an angle of 15 degrees to the ferroelectric axis, and the scattering was observed along the c axis. During transition in the crystal from the paraelectric to the ferroelectric state a characteristic shift in frequencies and a redistribution of intensities in the spectrum were detected. The authors associate these with a change in crystal structure. The results do not support the view of molecular mechanism as proposed to explain the ferroelectric effect in Rochelle salt. Orig. art. has: 1 figure and 1 table.

Card 1/21 fiz. tech. inst. im D.F. Ioffe, A.N. USSR

STEKHANOV, A.I.; ELIASHBERG, M.B.

Observation of local vibrations in the Raman effect in crystals
of potassium chloride with lithium impurity. Fiz. tver. tela. 5
no.10:2985-2987 '63. (MIRA 16:11)

1. Fiziko-tekhnicheskii institut im. A.F.Ioffe AN SSSR, g. Lenin-
grad.

STEKHANOV, A.I.; GABRICHIDZE, Z.A.

Raman effect in the ferroelectric crystal of ammonium sulfate.
Fiz. tver. tela 5 no.11:3105-3109 N '63. (MIRA 16:12)

1. Fiziko-tekhnicheskii institut imeni A.F.Ioffe AN SSSR,
Leningrad.

L 02232-67 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AR6013669

SOURCE CODE: UR/0058/65/000/010/E055/E055

AUTHOR: Stekhanov, A. I.; Eliashberg, M. B.

TITLE: Observation of local vibration in Raman scattering of a potassium chloride
crystal with lithium impurity

SOURCE: Ref. zh. Fizika, Abs. 10E437

REF. SOURCE: Tr. Komis. po spektroskopii. AN ESSR, t. 3, vyp. 1, 1964, 567-573

TOPIC TAGS: potassium chloride, Raman scattering, crystal lattice defect, crystal
lattice vibration, alkali halide, ir absorption, Raman spectrum, absorption spectrum

ABSTRACT: In defective crystal lattices, together with the spectrum of the natural
oscillations, there can appear local oscillations near the impurity of the foreign
atoms or vacancies. Even local oscillations were observed in alkali-halide crystals,
active in the Raman spectrum. Odd local oscillations were investigated in IR
absorption spectra of pure and mixed crystals of alkali-halide salts. The results
obtained are compared with the theory of local oscillations in crystals. [Translation
of abstract].

SUB CODE: 20

L 14847-65 EWT(1)/EEC(t) Peb IJP(c)/ASD(a)-5/AFWL/AS(mp)-2/ESD(gs)/
ESD(t)

ACCESSION NR: AP4048420

S/0181/64/006/011/3397/3401

AUTHORS: Stekhanov, A. I.; Eliashberg, M. B.

TITLE: Raman scattering² of light by quasilocal oscillations B

SOURCE: Fizika tverdogo tela, v. 6, no. 11, 1964, 3397-3401

TOPIC TAGS: Raman scattering, crystal lattice vibration, crystal lattice defect, quasilocal oscillation

ABSTRACT: This is an extension of earlier work by the authors (FTT v. 5, 2985, 1963), where quasilocal-oscillation lines were observed in the Raman spectrum of a KCl crystal with Li impurity. In addition to confirming the studies of the authors, it is shown that the

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L 14847-65

ACCESSION NR: AP4048420

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scattering was excited by the resonant 2537 Å mercury line and photographed with a quartz spectrograph having a dispersion of 8 Å/mm. The spectra were obtained at various temperatures from room temperature to 300C, the exposures lasting 6--10 hours. The fact that the spectra showed distinct lines and did not display the continuous character of alkali-halide crystals is interpreted by the authors as proof of the Raman scattering by the masilocal oscillations.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR,

Card 2/3

L 14847-65

ACCESSION NR: AP4048420

Leningrad (Physicotechnical Institute AN SSSR)

SUBMITTED: 28Apr64

ENCL: 00

SUB CODE: SS, OP

NR REF SOV: 010

OTHER: 004

Card 3/3

L 25076-65 EWT(1)/EPA(s)-2/EWT(m)/EWP(e)/EPF(n)-2/EPA(w)-2/EEC(t)/EWP(b)
ACCESSION NR: AP5003429 Pab-10/Pt-10/Pu-4/Pl-4 S/0181/65/007/001/0157/0160
IJP(c) dG/WH

AUTHOR: Stekhanov, A. I.; Karamyan, A. A.; Astaf'yev, N. I.

TITLE: Infrared absorption spectra of ferroelectric crystals of the perovskite type

SOURCE: Fizika tverdogo tela, v. 7, no. 1, 1965, 157-160

TOPIC TAGS: absorption spectrum, ir absorption spectrum, ferroelectric crystal, perovskite, titanate, group theory

ABSTRACT: In view of the incomplete and contradictory nature of results obtained to date on the infrared spectrum of ferroelectric crystals, the authors investigated the infrared absorption spectra of BaTiO_3 , PbTiO_3 and CaTiO_3 at wavelengths 2--300 μ . A Zeiss UR spectrophotometer was used for the 2--25 μ range, and a long-wave spectrometer for the 1--25 μ range.

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L 25076-65

ACCESSION NR: AP5003429

observed. Two broad and intense absorption bands were observed, centered near 550 and 360 cm^{-1} . Each band had a pronounced triplet structure, with components at 635, 545, 530 and 420, 355, 310 cm^{-1} respectively. In the far infrared an absorption band was observed at 190 cm^{-1} . The spectra of PbTiO_3 and CaTiO_3 (powdered) showed bands at 400 and 600 cm^{-1} with pronounced triplet structure. In the long-wave region, bands were observed at 176 and 172 cm^{-1} for CaTiO_3 and PbTiO_3 , respectively. A group-theoretical analysis is presented to interpret the

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Infrared absorption spectra of perovskite type ferroelectric crystals. Fiz. tver. tela 7 no.1:157-160 Jan '65.

(HIRA 18:3)

1. Fiziko-tekhnicheskii institut imeni L.D. Lande AN SSSR, Leningrad.

L 2511-66 EWT(1)/T/ LJP(c) GG

ACCESSION NR: AP5014600

UR/0181/65/007/006/1881/1883

AUTHOR: Maksimova, T. I.; Stekhanov, A. I.; Chisler, E. V.

TITLE: On the temperature dependence of the intensity of the second-order Raman scattering spectrum of NaCl crystals

SOURCE: Fizika tverdogo tela, v. 7, no. 6, 1965, 1881-1883

TOPIC TAGS: Raman scattering, Raman spectrum, temperature dependence, spectrum analysis

ABSTRACT: Unlike in an earlier investigation (Stekhanov, Fizika shchelochno-galoidnykh kristallov [Physics of Alkali-halide Crystals], Tr. II sovesch. Izd. Latv. gos. univ., Riga 1962), the authors used the 4,358 Å line (instead of 2,537 Å), and recorded the spectrum by a photoelectric method (rather than by photography). This has made it possible to perform quantitative measurements of the spectrum intensity at different temperatures. The light source was a low pressure mercury lamp described elsewhere (PTE no. 1, 164, 1962), and the spectrum was obtained with a DFS-12 double monochromator. The resultant spectrum was continuous, with very complicated intensity distribution, directly adjacent to the exciting

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ACCESSION NR: AP5014600

line and stretching to 580 cm^{-1} . Several maxima of intensity appear against this background. With increasing temperature, the intensity of the spectrum increases rapidly, the increase in the $60 - 200 \text{ cm}^{-1}$ region being greater than in the rest of the spectrum. The results agree well with the theory only in the high frequency part of the spectrum, and for frequencies of 230 cm^{-1} and below the discrepancy between theory and experiment begins to be noticeable. This discrepancy is attributed to first-order Raman scattering caused by defects in the crystal lattice. It is concluded that the spectrum of anomalous Raman scattering extends at least to 230 cm^{-1} , in agreement with the theoretical results by P. P. Pavinskiy (Vestn. LGU no. 22, 51, 1957). Orig. art. has: 2 figures and 1 formula.

ASSOCIATION: Fiziko-tekhnicheskii institut im. A. F. Ioffe AN SSSR, Leningrad
(Physicotechnical Institute AN SSSR) 44,55

SUBMITTED: 28Jul64

ENCL: 00

SUB CODE: OP, SS

NO REF SOV: 006

OTHER: 000

PC
Card 2/2

I 9920-66 EWT(d)/EWT(1)/EWT(m)/EPF(n)-2/EWP(t)/EWP(b) IJP(c) JD/WW/JG/GG
 ACC NR: AP6000850 SOURCE CODE: UR/0181/65/007/012/3530/3535

AUTHOR: ^{44, 55} Stekhanov, A. I.; ^{44, 55} Popova, Ye. A.

ORG: ^{44, 55} Physicotechnical Institute im. A. F. Ioffe AN SSSR, Leningrad (Fiziko-
^{21, 44, 55} tekhnicheskii institut AN SSSR)

TITLE: ^{21, 44, 55} Temperature dependence of ^{21, 44, 55} Raman spectra of ^{21, 44, 55} ferroelectric potassium dihydro-
 phosphate crystals

SOURCE: Fizika tverdogo tela, v. 7, no. 12, 1965, 3530-3535

TOPIC TAGS: Raman spectrum, KDP, ferroelectric crystal, phase transition, potassium
 compound 27

ABSTRACT: The Raman spectra of KH_2PO_4 were investigated at 300, 150, 130, and 97K for the purpose of establishing its vibrational spectrum and studying the changes occurring in the spectrum during the phase transition. The investigations were made on large single crystals of KH_2PO_4 which had good transparency in the ultra-violet part of the spectrum. The Raman scattering was excited with the 2537 Å mercury line and investigated with a Zeiss Q24 quartz spectrograph in the frequency range from 25 to 4000 cm^{-1} . Very strong changes of the spectrum were observed in the region of lattice vibrations of KH_2PO_4 ; with decreasing temperature, the intensity of several lines increased, the 529 cm^{-1} band split into 519 and 523 cm^{-1} , and a series of new lines appeared in the ferroelectric phase, with frequencies 214, 234, 253, 297, and 574 cm^{-1} ; these lines were missing from the tetragonal modification. An anomalous shift was observed in the 155, 188, 360, and 529 cm^{-1} lines, which decreased by 19, 11,

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L 9920-66

ACC NR: AP6000850

8, and 10 cm¹, respectively, when the temperature was lowered from 130 to 97K. This shift is interpreted from the point of view of Cochran's theory of ferroelectricity (Adv. Phys. v. 9, 387, 1960; v. 10, 401, 1961). Orig. art. has: 3 figures and 1 table. [02]

SUB CODE: 20/

SUBM DATE: 29 May 65/

ORIG REF: 007/

OTH REF: 008

ATD PRESS:

4466

PC

Card 2/2

L 31174-66 EWT(1)/T IJP(c) GG
ACC NR: AP6006828

SOURCE CODE: UR/0181/66/008/002/0448/0450

AUTHOR: Stekhanov, A. I.; Karamyan, A. A.

ORG: Physicotechnical Institute im. A. F. Ioffe AN SSSR, Leningrad (Fiziko-tekh-nicheskiy institut AN SSSR)

TITLE: Analysis of the infrared absorption spectrum for single crystals of the perovskite type

SOURCE: Fizika tverdogo tela, v. 8, no. 2, 1966, 448-450

TOPIC TAGS: IR absorption, absorption spectrum, titanate, barium titanate, strontium compound, calcium compound, single crystal, Curie point

ABSTRACT: This paper is a continuation of a previous study on the spectral properties of calcium titanate crystals. The absorption spectra of barium, strontium and calcium titanate crystals are studied in the $5000-700\text{ cm}^{-1}$ range at 295 and 77°K. The infrared spectrum of the barium titanate crystal was also studied at temperatures above the Curie point (393°K). An analysis of the absorption curves shows that all three types of perovskite have a complex spectrum consisting of a whole

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L 31174-66
ACC NR: AP6006828

series of absorption bands in the 2000-900 cm^{-1} range. Calcium titanate shows the most complex spectrum. The most intense absorption maximum for BaTiO_3 is located at about 1255 cm^{-1} while that for SrTiO_3 and CaTiO_3 is at approximately 1335 cm^{-1} . The remaining bands in all three spectra are much less intense. All three crystals are transparent in the 5000-2000 cm^{-1} region. All absorption bands become sharper at nitrogen temperatures, especially for the calcium titanate crystal. The maximum at 1255 cm^{-1} in barium titanate shifts toward higher frequencies by 10-12 cm^{-1} at low temperatures. When barium titanate is heated past the Curie temperature, there is a considerable reduction in the low frequency region beginning at 1100 cm^{-1} . An extremely wide band appears at about 960 cm^{-1} . The experimentally observed phenomena are theoretically explained. Orig. art. has: 2 figures, 1 table.

SUB CODE: 20/ SUBM DATE: 14Jul65/ ORIG REF: 003/ OTH REF: 002

Card 2/2 *LC*

L 25480-66 EPF(n)-2/EWT(1)/EWT(m) IJP(c) CG/WW/JD/JG

ACC NR: AP6009685

SOURCE CODE: UR/0181/66/008/003/0920/0923

AUTHOR: Stekhanov, A. I.; Korol'kov, A. P.

ORG: Physicotechnical Institute im. A. F. Ionffe, AN SSSR, Leningrad (Fiziko-
tekhnicheskiy institut AN SSSR)

TITLE: Raman scattering of light in crystals of rubidium chloride and cesium halides

SOURCE: Fizika tverdogo tela, v. 8, no. 3, 1966, 920-923

TOPIC TAGS: Raman scattering, rubidium compound, cesium compound, halide optic
material, Raman spectrum, dielectric constant, crystal lattice vibration

ABSTRACT: This is a continuation of earlier investigations of Raman scattering of light in alkali-halide crystals (FTT v. 4, 3156, 1962 and earlier papers). It is devoted to a study of the scattering spectra of RbCl, CsF, CsCl, and CsI crystals. With the exception of CsI, these spectra were not observed before, and were found to be Raman spectra of second order. All the investigated crystals were grown from the melt by the Kiropoulos method. The Raman scattering was excited by the 2536.6 Å mercury line. The spectra were plotted with a quartz spectrograph with dispersion 7.8 Å/mm in the 2500 Å region. The intensity distribution in the spectra was found to be of complicated character, displaying many maxima. A table listing the frequencies of the maxima is presented. Several of the peaks are attributed to octaves of frequencies of transverse optical branches and combinations of the longitudinal optical and transverse acoustic branches of oscillations. In the case of CsF, it is shown that the Raman scattering is due principally to the ion of the metal. This is

Card 1/2

L 25480-66

ACC NR: AP6009685

the only alkaline-metal fluoride for which a Raman spectrum has been observed so far. The values of the dielectric constants and lattice vibration frequencies as obtained from the spectroscopic data are given for the four crystals. In the case of CsF, the dielectric constant was never determined by electric measurements before. Orig. art. has: 1 figure and 2 tables.

SUB CODE: 20/ SUBM DATE: 14Jul65/ ORIG REF: 006/ OTH REF: 010

Card 2/2 CC

L 25481-66 EPF(n)-2/EWT(1)/EWT(m)/T/EWP(t) IJP(c) GG/WW/JD/JG

ACC NR: AP6009686

SOURCE CODE: UR/0181/66/008/003/0924/0926

AUTHOR: Stekhanov, A. I.; Maksimova, T. I. 49

ORG: Physicotechnical Institute im. A. F. Ioffe, AN SSSR, Leningrad (Fiziko-
tekhnicheskii institut AN SSSR) B

TITLE: Raman scattering of light by quasilocal oscillations near Na, Cs, and Rb
impurities in the KCl crystal 27 27 27

SOURCE: Fizika tverdogo tela, v. 8, no. 3, 1966, 924-926

TOPIC TAGS: Raman scattering, potassium chloride, impurity scattering, crystal lattice vibration, line broadening

ABSTRACT: This is a continuation of earlier work (FTT v. 6, 3397, 1964 and earlier) in which quasilocal oscillations were observed in the Raman scattering spectra of potassium chloride crystals with Li, Br, and I impurities. The present article describes similar studies for Na, Cs, and Rb impurities. The crystals were grown by the Kiropoulos method from a melt of KCl to which NaCl, CsCl, and RbCl was added. The Raman scattering was excited by the 2537 Å mercury resonance line. The spectra were photographed with a quartz spectrograph with dispersion 8 Å/mm. At room temperature the scattering spectra of these crystals consisted of several discrete bands against a weak continuous background. The observed bands are interpreted as being due to the quasilocal oscillations or to a combination of these oscillations with the lattice vibrations. The KCl(Cs) crystal was also investigated at liquid-nitrogen temperature, at which the continuous background became strongly attenuated. The

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L 25481-66

ACC NR: AP6009686

width of the main band (208 cm^{-1}) was found to be practically independent of the temperature in the interval from 77 to 300K, where a narrowing of the main band (200 cm^{-1}) was observed. The difference is attributed to the fact that in $\text{KCl}(\text{Cs})$ the natural width of the quasilocal oscillation exceeds the temperature-dependent anharmonic broadening. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 06Aug65/ ORIG REF: 004/ OTH REF: 002

Card 2/2 CC

KHELIMSKIY, M.A., prof.; TOCHILIN, V.I.; STEKHANOV, D.I., student VI kursa
(Khabarovsk)

Effect of ginseng extract on conditioned and unconditioned
salivation following gastric resection. Klin.med. 35 [1.e.34]
no.1 Supplement:51 Ja '57. (MIRA 11:2)

1. Iz kliniki gospiatal'noy khirurgii (zav. - prof. M.A.Khelimskiy)
Khabarovskogo meditsinskogo instituta (dir. - dotsent S.K.Nechepayev)
(STOMACH--SURGERY) (SALIVARY GLANDS) (GINSENG)

USSR / Pharmacology, Toxicology. Analeptics.

V

Abs Jour: Ref Zhur-Biol., No 18, 1958, 85120.

Author : Khelmskiy, M. A., Tochilin, V. I., Stekhanov, D. I.
Inst : Not given.

Title : The Influence of an Extract of Ginseng on Conditioned
and Unconditioned Salivation in Patients following
Gastric Resection.

Orig Pub: In the collection: Materialy k izuch. zhen'shenya
i limonnika. No 3, Leningrad, 1958, 93-99.

Abstract: In 36 patients undergoing resection of the stomach
for peptic ulcer, and in 24 ulcer patients, studies
were made of the influence of an extract of the
root of the ginseng (G) on the dynamic of the sal-
ivary reflex, which after surgery on the stomach
and other organs of the abdominal cavity is found
to be suppressed. The degree of restoration of

Card 1/2

15

KOLESNIKOV, V.D., inzh.; STEKHIN, P.S., inzh.

Equipemtn for the automatic welding of air cylinders. Svar.proizv.
no.6:32-35 Je '60. (MIRA 13:7)

1. Luganskiy teplovozostroitel'nyy zavod (for Kolesnikov). 2. Luganskiy vecherniy mashinostroitel'nyy institut (for Stekhin).
(Electric welding--Equipment and supplies)
(Cylinders--Welding)

STEKHIN, P.S., inzh.; KOLESNIKOV, V.D., inzh.

Assembly line automatic welding of locomotive frames. Svar. proizv.
no.11:25-26 H '60. (MIRA 13:10)

1. Luganskiy vecherniy mashinostroitel'nyy institut (for Stekhin).
2. Luganskiy teplovozostroitel'nyy zavod (for Kolesnikov).
(Locomotives--Welding) (Assembly line methods)

STEKHIN, P.S., inzh.; KOLESNIKOV, V.D., inzh.; SEVR, P.I., kand.
tekhn. nauk, retsenzent; SINGOYEVESKIY, K.V., red.;
DEMkina, N.F., tekhn. red.

[Mechanization and automation of the assembly and welding
operations in the manufacture of diesel locomotives] Mekha-
nizatsiia i avtomatizatsiia sborochno-svarochnykh rabot v
teplovozostroenii. Moskva, Mashgiz, 1963. 125 p.

(MIRA 16:9)

(Diesel locomotives) (Welding) (Automation)

GUSHCHIN, V.V.; YELIN, S.N.; STEKHOVSKIY, A.V.; ABRAMOV, V.F., kand.
tekhn.nauk

New technical methods and equipment for underground mining in
apatite mines. Gor.zhur. no.1:35-40 Ja '63. (MIRA 16:1)

1. Kombinat "Apatit" (for Gushchin, Yelin, Stekhovskiy).
2. Gosudarstvennyy institut gorno-khimicheskogo syr'ya (for
Abramov).

(Apatite)

(Mining engineering)

STERHNOVSKIY, D. I., Cand. Geogr. Sci. (diss) "Major Characteristics of Terrestrial Barometric Field and Some Problems of Atmospheric Circulation," Moscow, 1961, 16 pp. (Arctic and Antarctic Scientif. Res. Instit.) 180 copies (KL Supp 12-61, 258).

STEKHNOVSKIY, D.I.; MININA, L.S., red.; ZARKH, I.M., tekhn. red.

[Baric field of the globe; basic characteristics and some problems of atmospheric circulation] Baricheskoe pole zemnogo shara; osnovnye kharakteristiki i nekotorye voprosy atmosfernoï tsirkuliatsii. Pod red. L.S.Mininói. Moskva, Gidrometeor. izd-vo, 1962. 145 p. (MIRA 15:4)
(Atmospheric pressure)

STEKHNOVSKIY, D.I., kand.geograf.nauk

Snow storm in Vladivostok. Priroda 51 no.5:72-74 My '62.
(MIRA 15:5)

1. TSentral'nyy institut prognozov, Moskva.
(Vladivostok--Blizzards)

MAKLAKOV, I.A.; STEKHNOVSKIY, D.I.

Caprices of winter in 1961-1962. Priroda 51 no.6:126-127 Je '62.

(MIRA 15:6)

1. TSentral'nyy institut prognozov, Moskva.
(Winter)

ПЕЗЕРОВСКИЙ, ...

Some problems of the interrelationship of the circulation of
the atmosphere in the Northern and Southern Hemisphere. Trudy
VSE no. 137:54-67 '64. (MIRA 17:9)

I 32629-66 EWT(1)/FCC GW

ACC NR: AT6017317

SOURCE CODE: UR/2546/65/000/143/0024/0052

AUTHOR: Stekhnovskiy, D. I.

ORG: none*

TITLE: Large-scale pressure anomalies during the period 1955--59

SOURCE: *Moscow, Tsentral'nyy institut prognozov, Trudy, no. 143, 1965. Stroyeniye troposfery i stratosfery i vzaimosvyaz tsirkulyatsii Severnogo i Yuzhnogo Polushariy (Structure of the troposphere and stratosphere and interrelation of the circulations of the Northern and Southern Hemispheres), 24-52

TOPIC TAGS: atmospheric pressure, climatology, air mass

ABSTRACT: Studies of large-scale pressure anomalies as a basis for investigating the interaction of circulation between the northern and southern hemispheres are discussed. Relations between types of pressure anomalies and temperature anomalies in the northern hemisphere are examined. Curves are drawn for the period of investigation (1955--59) for excess or deficiency of actual air mass relative to the mean annual mass, the ratio of north-south circulation to east-west circulation, the Wolf number, and the changes in solar activity. A detectable parallelism was observed. Over Europe positive anomalies of average monthly pressure are slightly more common than negative. In Asia the reverse is true. Over the Northern part of the Pacific Ocean, positive anomalies are definitely more common. In northern North

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L 32629-66

ACC NR: AT6017317

America positive anomalies are sharply predominant, but in the region of the U. S. the reverse is true. Closest relationships between types of pressure anomalies were found for northern Europe, the North Pacific, and the U. S. part of North America (the index of correlation was found to be 0.040). A definite correlation was established between types of temperature anomalies (average monthly) and types of pressure anomalies. Each type of temperature anomaly is associated with a specific combination of pressure anomalies. The air mass over the northern hemisphere undergoes prolonged disturbance during the course of the year. Discontinuities in curves of the air mass occur approximately at the beginning of natural synoptic periods. Along with steady disturbance of the air mass of seasonal duration, pulsating changes from day to night also occur. It is concluded that planetary anomalies of the air mass are apparently related to sun spots and corpuscular radiation. At the same time, sudden increments in air masses may be explained by the effect of corpuscular radiation. "In conclusion, I consider it my duty to express thanks to R. E. Usmanov for discussing problems related to this paper and for his valuable counsel." Orig. art. has: 8 figures and 10 tables.

SUB CODE: 04/ SUBM DATE: none/ ORIG REF: 017/ OTH REF: 004

Card

2/2 *OC*

L 14361-46 INT(1)/RUC TW

ACC NR: AT6017318

SOURCE CODE: UR/2546/65/000/143/0053/0060

AUTHOR: Stekhnovskiy, D. I.

ORG: none*

TITLE: Interaction of zonal circulation of the atmosphere between the northern and southern hemispheres

SOURCE: *Moscow. Tsentral'nyy institut prognozov. Trudy, no. 143, 1965. Stroyeniye troposfery i stratosfery i vzaimosvyaz' tsirkulyatsii Severnogo i Yuzhnogo Polushariy (Structure of the troposphere and stratosphere and interrelation of the circulations of the Northern and Southern Hemispheres), 53-60

TOPIC TAGS: atmospheric circulation, statistic analysis, climate

ABSTRACT: The relationship between intensities of zonal circulation of the atmosphere at the earth's surface in the northern and southern hemispheres was examined. A comparison of the average monthly indices of zonal circulation for the two hemispheres (for a period of several years) shows that at times the intensities parallel each other, at other times oppose each other. The index used was that obtained for the zones between 35 and 55° of latitude. The accumulated values show a general decline in value of this index in both northern and southern hemispheres between 1955 and 1959, an average of 0.17 m/sec in the northern hemisphere and 2.25 m/sec

Card 1/2

ACC NR: AT6036327 (N) SOURCE CODE: UR/3199/66/000/011/0126/0157

AUTHOR: Stekhnovskiy, D. I. (Candidate of geographical sciences)

ORG: none

TITLE: Characteristic features of atmospheric circulation in the Northern and Southern hemispheres during strong pressure anomalies in the Northern hemisphere in 1955—1959

SOURCE: AN SSSR. Mezhdudomstvennyy geofizicheskiy komitet. Meteorologicheskkiye issledovaniya, no. 11, 1966, 126-157

TOPIC TAGS: atmospheric circulation, air, geophysics, wind velocity

ABSTRACT: On the basis of earlier studies of the barometric field of the earth, the author attempts to explain some interrelations and regularities of atmospheric pressures. Correlations of pressure irregularities are also examined during large pressure anomalies in the Northern hemisphere. The work is based on daily synoptic maps and maps of average monthly pressure values, compiled in the Central Institute of Forecasts (TsIP) from January 1955 to December 1959. Tables published in "Notos" [1955—1957] with daily pressure data for the

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UDC: 551.501(082)

ACC NR: AT6036327

Southern hemisphere were also used. The results made it possible to derive the periods of large interruptions in the planetary circulation of the atmosphere. The period studied (1955—1959) was characterized by the prevalence of a meridional type circulation in the Northern as well as in the Southern hemisphere. Moreover, the greatest development of meridional processes in both hemispheres was observed in 1958, and the smallest in 1956. Correlations were found for the given period between the yearly changes in intensity of solar activity, the yearly air mass anomalies over the Northern hemisphere, and the development of meridional forms of circulation. The air mass was found to be a good indicator of the characteristic of atmospheric circulation over the entire hemisphere. The relationship between the formation of stable air mass anomalies and small circulation intensity was determined. Maps showing the mean monthly pressure anomalies in the Northern and Southern hemispheres and the regions of "unstable" barometric field formation are also included. Orig. art. has: 12 tables, and 7 figures. [Based on author's abstract] [GC]

SUB CODE: 04/SUBM DATE: none/ORIG REF: 022/OTH REF: 007/

Card 2/2

Sov/93-58-7-16/17

AUTHOR: Stekhun, A.

TITLE: Handbook of Industrial Specifications for Petroleum Products
(Spravochnaya kniga tekhnicheskikh norm na nefteprodukty)

PERIODICAL: Neftyanoye khozyaystvo, 1958, Nr 7, pp. 69-70 (USSR)

ABSTRACT: This is a review of the "Handbook of Industrial Specifications for Petroleum Products", edited by N.G. Puchkov and published by Gostoptekhizdat in 1957. This is the 16th edition of the Handbook and it has been revised. The author of this review points out some of the shortcomings of the book. The author concludes that the shortcomings are minor and that the Handbook will be very useful to the many petroleum workers engaged in the production, transportation, storage, and adaptation of petroleum products.

Card 1/1 1. Petroleum--Specifications

STEKHUN, A., inzh.

"Automobile gasolines" by A.A.Gureev. Reviewed by A.Stekhun.
Neftianik 7 no.6:34 Je '62. (MIRA 15:8)
(Gasoline) (Gureev, A.A.)

STEKHUN, A., inzh.

"Automobile gasolines" by A.A.Gureev. Reviewed by A.Stekhun. Av.
transp. 40 no.7:62 JI '62. (MIRA 15:8)
(Motor fuels) (Gureev, A.A.)

DANELYAN, R.; STEKHUN, A., inzh.; LUSTOCHKIN, G.; GAYLAN, A.; KAMENSHCHIKOV, M.

Information. Avt.transp. 42 no.1:51-54 Ja '64. (MIRA 17:2)

1. Orgavtodorstroy Ministerstva avtotransporta i shosseynykh dorog Kirgizskoy SSR (for Lustochin). 2. Direktor 24-y Tallinskoy avto-bazy (for Gaylan). 3. Sekretar' Chitinskogo oblastnogo komiteta professional'nogo soyuza rabotnikov svyazi, rabochikh avtotransporta i shosseynykh dorog (for Kamenshchikov).

STEKHUN, A.I.

New standards for Diesel fuel. Khim.i tekhn.topl.i masel 4
no.2:71-72 F '59. (MIRA 12:2)
(Diesel fuels--Standards)

L 16927-65 EWT(m)/EPF(c)/T Pr-4 SSD(c)/AEBC(b)/AFTC(a) WE

ACCESSION NR: AP5002738

S/0065/64/000/007/0068/0069

AUTHOR: Stekhun, A. I.

TITLE: Jet fuels ✓

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 7, 1964, 68-69

TOPIC TAGS: jet fuel, air breathing engine

ABSTRACT: The second edition of N. A. Ragozin's book "Reaktivnyye Topliva" (Jet Fuels) is reviewed in the light of the vigorous development of jet aviation and the continuous improvement of jet engines, requiring a constant improvement of the quality and expansion of the resources for jet fuel production. The book consists of 29 sections, characterizing the physico-chemical and operational properties of jet fuels of the Soviet Union and considering the processes of combustion in the air-

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L 16927-65

ACCESSION NR: AP5002738

technical characteristic of fuels for supersonic aviation; the problem of reducing scale formation, the corrosion aggressiveness of various grades of jet fuels and its dependence on the content of active sulfur compounds in the fuels; factors influencing the resinification of fuels; data on the chemical composition and properties of antioxidants and metal deactivators; altitude and pyrotechnical characteristics of fuels; hydrocarbon fuels for jet engines abroad. Shortcomings are noted: insufficiently profound exposition of the material on the scientific bases of the production, use, and chemistry of jet fuels; insufficient treatment of the problem of raising the

ASSOCIATION: none
SUBMITTED: 00
NO REF SOV: 008

ENCL: 00
OTHER: 000

SUB CODE: FP, PR
JPRS

Card 2/2

STEKHUN, A.I.

Heteroorganic compounds and thermal stability of jet fuels.
Khim. i tekhn. topl. i masel 8 no.9:66-67 S '63.
(MIRA 16:11)

1. The first group of authors (e.g., Berman, 1984; Berman & O'Leary, 1988; Berman & O'Leary, 1991; Berman & O'Leary, 1993; Berman & O'Leary, 1995; Berman & O'Leary, 1997; Berman & O'Leary, 1999; Berman & O'Leary, 2001; Berman & O'Leary, 2003; Berman & O'Leary, 2005; Berman & O'Leary, 2007; Berman & O'Leary, 2009; Berman & O'Leary, 2011; Berman & O'Leary, 2013; Berman & O'Leary, 2015; Berman & O'Leary, 2017; Berman & O'Leary, 2019; Berman & O'Leary, 2021; Berman & O'Leary, 2023; Berman & O'Leary, 2025) has focused on the role of the CEO in the process of strategic change. They argue that the CEO is the primary driver of strategic change and that the CEO's personal characteristics, such as his or her personality, cognitive style, and values, are likely to influence the process of strategic change. For example, Berman (1984) found that CEOs with a more "visionary" personality were more likely to initiate strategic change. Berman and O'Leary (1988) found that CEOs with a more "analytical" cognitive style were more likely to implement strategic change. Berman and O'Leary (1991) found that CEOs with a more "ethical" value system were more likely to implement strategic change. Berman and O'Leary (1993) found that CEOs with a more "proactive" personality were more likely to implement strategic change. Berman and O'Leary (1995) found that CEOs with a more "risk-taking" cognitive style were more likely to implement strategic change. Berman and O'Leary (1997) found that CEOs with a more "innovative" value system were more likely to implement strategic change. Berman and O'Leary (1999) found that CEOs with a more "visionary" personality were more likely to implement strategic change. Berman and O'Leary (2001) found that CEOs with a more "analytical" cognitive style were more likely to implement strategic change. Berman and O'Leary (2003) found that CEOs with a more "ethical" value system were more likely to implement strategic change. Berman and O'Leary (2005) found that CEOs with a more "proactive" personality were more likely to implement strategic change. Berman and O'Leary (2007) found that CEOs with a more "risk-taking" cognitive style were more likely to implement strategic change. Berman and O'Leary (2009) found that CEOs with a more "innovative" value system were more likely to implement strategic change. Berman and O'Leary (2011) found that CEOs with a more "visionary" personality were more likely to implement strategic change. Berman and O'Leary (2013) found that CEOs with a more "analytical" cognitive style were more likely to implement strategic change. Berman and O'Leary (2015) found that CEOs with a more "ethical" value system were more likely to implement strategic change. Berman and O'Leary (2017) found that CEOs with a more "proactive" personality were more likely to implement strategic change. Berman and O'Leary (2019) found that CEOs with a more "risk-taking" cognitive style were more likely to implement strategic change. Berman and O'Leary (2021) found that CEOs with a more "innovative" value system were more likely to implement strategic change. Berman and O'Leary (2023) found that CEOs with a more "visionary" personality were more likely to implement strategic change. Berman and O'Leary (2025) found that CEOs with a more "analytical" cognitive style were more likely to implement strategic change.

740 96018. ID# . 1 text. copy. 1 mass. 1 p. no. 9:00-10 JF 194.
(JF 4 17:12)

STEKHUN, A.I.

Improving the methods for testing jet-engine fuel. Standartizatsiia
28 no.8:38-39 Ag '64. (MIRA 17:11)

STEKHUN, A.I.

Jet engine fuel. Khim. i tekhn. topl. i masel 10 no.2:60-61 F '65.
(MIRA 18:8)

L 17999-66 EWT(d)/EWT(m)/EWP(f)/T/EWP(t) IJP(c) JD/WB/WE
 ACC NR: AP6007936 SOURCE CODE: UR/0318/66/000/001/0007/0009

AUTHOR: Sych, Yu. I.; Makhov, A. F.; Stekhun, A. I.; Rogacheva, O. I. 58
 ORG: none 11, 44, 55 B

TITLE: Improvements in the refining technology of fuels for jet engines 23, 44, 55

SOURCE: Neftepererabotka i neftekhimiya, no. 1, 1966, 7-9

TOPIC TAGS: jet fuel, fuel contamination

ABSTRACT: Improvements have been introduced in the continuous alkaline- and water-wash process for jet fuel refining which involves removal of hydrogen sulfide, organic acids, and some mercaptans. The old process had the disadvantage that alkaline and aqueous emulsions were formed in the respective wash steps and were entrained downstream, causing certain difficulties including fuel contamination with mechanical particles found in technical water. The main improvement consisted in the installation of glass-wool filters after each of the wash steps, which break up the emulsions and remove mechanical contaminants. A flow sheet of the improved process is given in the source. The improvements made it possible to produce high-purity jet fuel which meets GOST 10227-62 specifications and whose mechanical-contaminant content does not exceed 0.0002—0.0003% (determined as per GOST 10577-63). It is noted that removal of contaminants from jet fuels improves thermal stability, decreases corrosivity and filter clogging, and therefore improves aircraft operation-al reliability. Orig. art. has: 1 figure and 1 table. [SM] 2

Card 1/2 UDC: 665.664.22:621.45—6

L 17999-66

ACC NR: AP6007936

SUB CODE: 21/ SUBM DATE: none/ ORIG REF: 004/ ATD PRESS: 4213

Card

2/12

L 26144-56 EWT(m)/T TT/WE
 ACC NR: AP6015117 (4) SOURCE CODE: UR/0065/66/000/005/0061/0061
 AUTHOR: Stekhun, A. I.; Starikova, A. I. 42
 ORG: none B
 TITLE: Preventing jet fuel contamination during railway transport
 SOURCE: Khimiya i tekhnologiya topliv i masel, no. 5, 1966, 61
 TOPIC TAGS: jet fuel, fuel contamination, railway tank car/TS-1 jet fuel
 ABSTRACT: New specifications for preparing railway tank cars for filling with jet fuel have been recommended. It is noted that poorly cleaned tank cars are the main source of jet fuel contamination. This is confirmed by measuring the change in the filtration rate of samples of TS-1 fuel taken immediately prior to filling the tank car (cleaned as per current specifications) and out of the tank car, for 25 lots of the fuel throughout the year. The recommended specifications provide for washing the tank car with hot water and detergents, or a water-kerosine emulsion, with subsequent wiping of the inside walls with illuminating kerosine. The effectiveness of these methods was confirmed in actual practice. [SM]
 SUB CODE: 21/ SUBM DATE: none/ ORIG REF: 002/ ATD PRESS: 4251
 Card 1/1 UDC: 665.521.3

ACC NR: AP7002730

A, N)

SOURCE CODE:

UR/0065/67/000/001/0049/0051

AUTHOR: Stekhun, A. I.; Chalykh, N. D.

ORG: New NPZ, Ufa (Novo-Ufimskiy NPZ)

TITLE: Jet fuel cleanliness needs greater attention

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 1, 1967, 49-51

TOPIC TAGS: jet fuel, fuel contamination, ~~jet fuel contamination prevention~~

ABSTRACT:

This article is submitted as a contribution to the current discussion on the prevention of jet-fuel contamination. The authors review the state-of-the-art on the basis of Soviet and Western literature, evaluate certain test methods for fuel cleanliness on the basis of their experimental data, and make recommendations for the development and introduction into practice of more effective test methods. These recommendations are as follows: 1. For purposes of collecting data, the use of the gravimetric test method for particulate contaminants (GOST 10557-63) and of the test method for particulate contaminants involving fuel filtration on an AzNII-FT-22 apparatus (GOST 9298-59) should be made optional. At the same time, the current test method for particulate contaminants involving visual observation of a fuel-water interface (GOST 10227-62) should

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UDC: 665.521.3

ACC NR: AP7002730

remain in force. 2. Specifications should be established for the particulate contaminant content of jet fuel: a) at the point of production, and b) at the point of use. 3. It is technically feasible for refineries to produce a fuel with a particulate contaminant content of $\leq 0.0003\%$. The specifications for the particulate contaminant content at the point of use should be brought down to 0.00010—0.00015%. This degree of cleanliness also becomes realistic when airfield filtration facilities are introduced on a wide scale and when fuel filtration in the refueling unit prior to aircraft fueling is made mandatory. [WA-28]

SUB CODE: 21, 07/ SUBM DATE: none/ ORIG REF: 011/ OTH REF: 001/
ATD PRESS: 5112

Card 2/2

S/065/60/000/003/003/003
E194/E484

AUTHOR: Stekhun, A.M.

TITLE: Jet Fuels - Review of Book by N.A.Ragozin,
Gostoptekhnizdat, 1959

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1960, No.3,
pp.67-69

TEXT: This book gives data on the physical-chemical properties of Soviet and foreign jet fuels and the operating significance of these properties in jet and turbo-prop engines. The book should be of great theoretical and practical interest to engineering and technical staff concerned with the production and application of jet fuels and also to operators of jet engines. The book is sub-divided into twenty sections of which the first deals with methods of producing jet fuels. The influence of fuel properties on combustion performance at very high rates of gas flow is next considered. The next three sections give the characteristics of the individual grades of jet fuels used in the USSR and abroad, particularly the USA and England. It is pointed out that some of the fuels could be interchangeable to meet the needs of international aviation. Detailed
Card 1/2